THOMSON SEMICONDUCTORS

TS 135 → TS 1235
THYRISTORS

T-25-17

General purpose SCR suited for power supplies up to 400 Hz on resistive or inductive loads.
- V_{RRM} up to 1 200 V.
- Glass passivated chips.
- High stability and reliability.

Thyristors à usage général, pour des alimentations jusqu'à 400 Hz sur charges résistives ou inductives.
- *V_{RRM} jusqu'à 1 200 V.*
- *Pastilles glassivées.*
- *Grande stabilité des caractéristiques.*

$I_{T(RMS)} = 35$ A / $T_{case} = 75$ °C

$100\ V \leqslant \frac{V_{DRM}}{V_{RRM}} \leqslant 1\,200\ V$

Case / *Boîtier* : TO 48 metal (CB-267)

ABSOLUTE RATINGS (LIMITING VALUES) *VALEURS LIMITES ABSOLUES D'UTILISATION*	Symbol	Value	Unit
RMS on-state current* *Courant efficace à l'état passant**	$I_{T(RMS)}$	35 @ T_{case} = 75 °C	A
Mean on-state current* *Courant moyen à l'état passant**	$I_{T(AV)}$	22,5 @ T_{case} = 75 °C	A
Non repetitive surge peak on-state current** *Courant non répétitif de surcharge crête accidentelle à l'état passant***	I_{TSM} I_{TSM}	360 (t = 8,3 ms) 330 (t = 10 ms) @ $T_j \leqslant$ 125 °C	A A
I^2t for fusing *Valeur de la constante I^2t*	I^2t	545 (t = 10 ms) @ $T_j \leqslant$ 125 °C	A^2s
Critical rate of rise of on-state current*** *Vitesse critique de croissance du courant à l'état passant****	di/dt	100	A/µs
Storage and operating junction temperatures *Températures extrêmes de stockage et de jonction en fonctionnement*	T_{stg} T_j	−40 , + 150 −40 , + 125	°C °C

@ T_j = 125 °C	TS 135	TS 235	TS 435	TS 635	TS 835	TS 1035	TS 1235
$V_{DRM} = V_{RRM}$ (V)	100	200	400	600	800	1000	1200

Thermal resistances *Résistances thermiques*	Symbol	Value	Unit
— Junction to case for D.C. *Jonction-boîtier en continu*	$R_{th\ (j-c)}$	1,1	°C/W
— Contact (case to heatsink) *Contact (boîtier-radiateur)*	$R_{th\ (c-h)}$	0,4	°C/W

* Single phase circuit, 180° conduction angle
* *Circuit monophasé, angle de conduction 180°*

** Half sine wave
** *Demi-onde sinusoïdale*

*** Gate supply 20 V/20 Ω - tr ⩽ 0,1 µs - Half sine wave of 6,3 µs
*** *Générateur de gâchette* *Demi-sinusoïde*

THOMSON SEMICONDUCTORS
45, avenue de l'Europe - 78140 VÉLIZY - France
Tél. : 946.97.19 / Télex : 698 866 F

THOMSON COMPONENTS

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GATE CHARACTERISTICS (Maximum values)
CARACTÉRISTIQUES DE GACHETTE (Valeurs maximales)

P_{GM} = 60 W ($t = 500\ \mu s$)
$P_{G(AV)}$ = 1 W

I_{FGM} = 10 A ($t = 500\ \mu s$)
V_{FGM} = 15 V ($t = 500\ \mu s$)

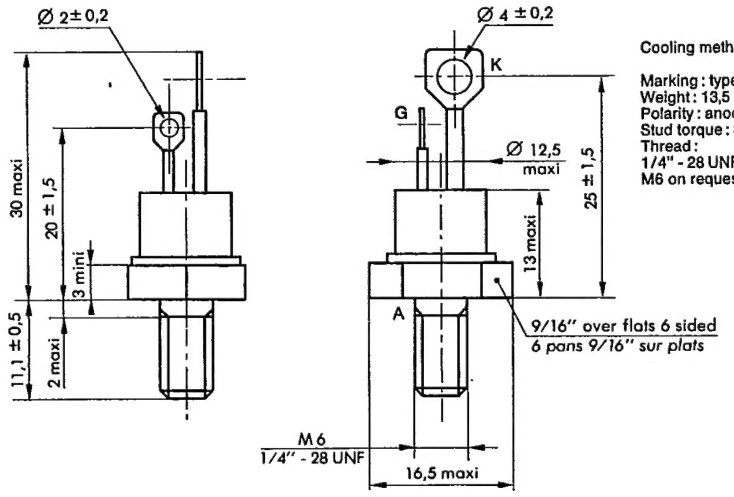
V_{RGM} = 5 V

ELECTRICAL CHARACTERISTICS
CARACTÉRISTIQUES ÉLECTRIQUES

Symbol	Value			Unit	Test conditions			
	min	typ	max					
I_{GT}			80	mA	T_j = 25 °C	V_D = 12 V	R_L = 33 Ω	$t_p \geq 20\ \mu s$
V_{GT}			3	V	T_j = 25 °C	V_D = 12 V	R_L = 33 Ω	$t_p \geq 20\ \mu s$
V_{GD}	0,2			V	T_j = 125 °C	$V_D = V_{DRM}$	R_L = 3,3 kΩ	
I_H		20		mA	T_j = 25 °C	I_T = 0,5 A	Gate open	
V_{TM}			2,2	V	T_j = 25 °C	I_{TM} = 70 A	t_p = 10 ms	
I_{DRM}			3,3	mA	T_j = 125 °C	V_{DRM} specified		
I_{RRM}			3,3	mA	T_j = 125 °C	V_{RRM} specified		
t_{gt}		2		μs	T_j = 25 °C I_G = 200 mA	I_T = 70 A di_G/dt = 2 A/μs	$V_D = V_{DRM}$	
t_q		100		μs	T_j = 125 °C di_R/dt = 30 A/μs	I_T = 10 A dv/dt = 20 V/μs	V_R = 30 V	V_D = 0,67 V_{DRM} Gate open
dv/dt*	100			V/μs	T_j = 125 °C	Linear slope up to 0,67 V_{DRM} specified		Gate open

* For higher guaranteed values, please consult us.

CASE DESCRIPTION
DESCRIPTION DU BOITIER



Cooling method : by conduction (method C)
Marking : type number
Weight : 13,5 ± 1 g
Polarity : anode to case
Stud torque : 3,5 m ⩓ Nmin-3,8 m ⩓ Nmax
Thread :
1/4" - 28 UNF : type N°
M6 on request : type N° + suffix M

TO 48 metal (CB-267)

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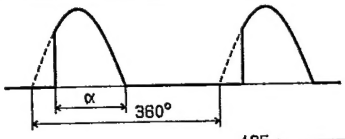


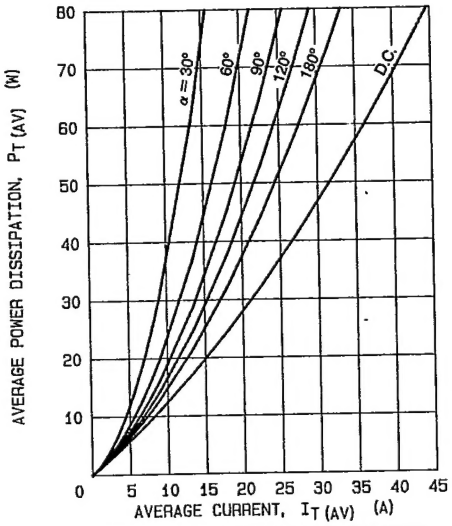


FIG.1 - MAXIMUM ON-STATE POWER DISSIPATION FOR SINUSOIDAL CURRENT WAVEFORM

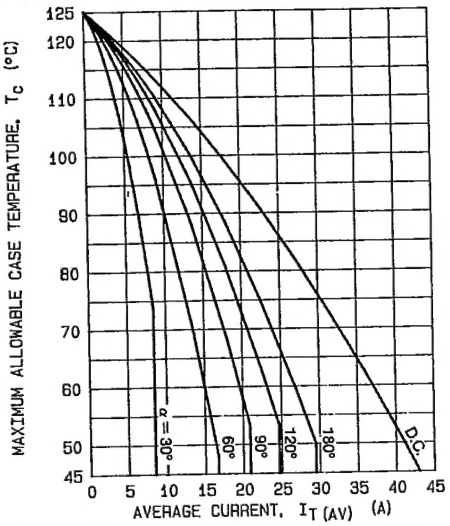
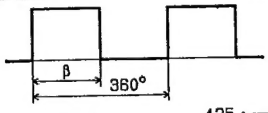


FIG.2 - MAXIMUM ALLOWABLE CASE TEMPERATURE FOR SINUSOIDAL CURRENT WAVEFORM



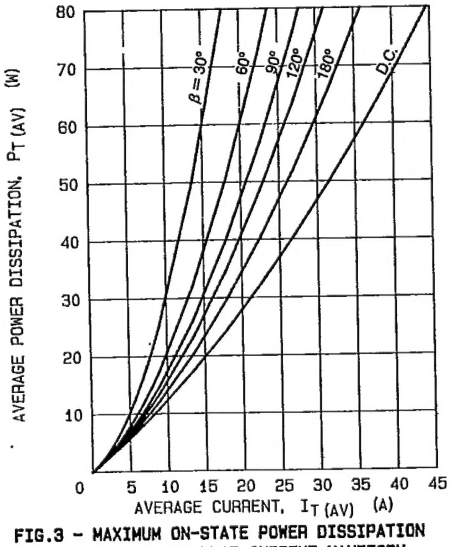


FIG.3 - MAXIMUM ON-STATE POWER DISSIPATION FOR RECTANGULAR CURRENT WAVEFORM

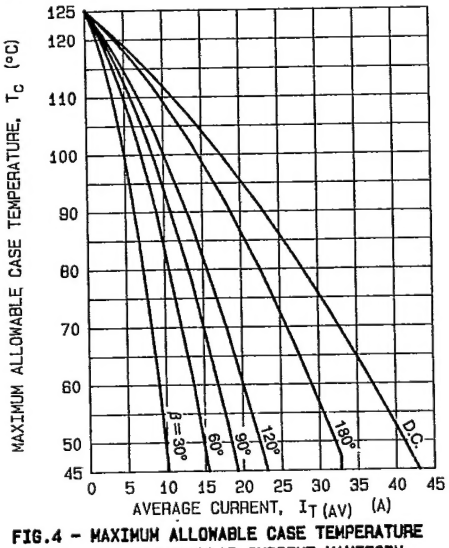


FIG.4 - MAXIMUM ALLOWABLE CASE TEMPERATURE FOR RECTANGULAR CURRENT WAVEFORM

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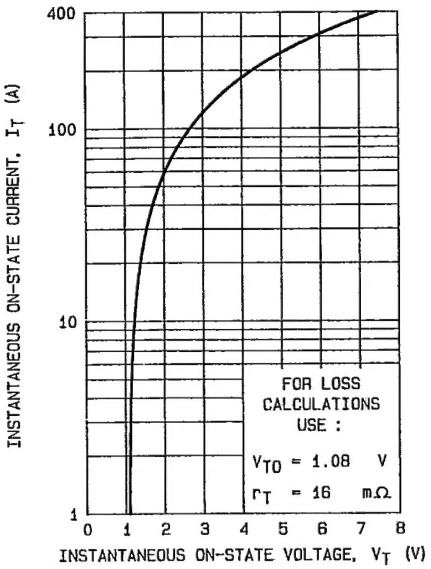


FIG.5 - MAXIMUM ON-STATE CONDUCTION CHARACTERISTIC (T_J = 125 °C).

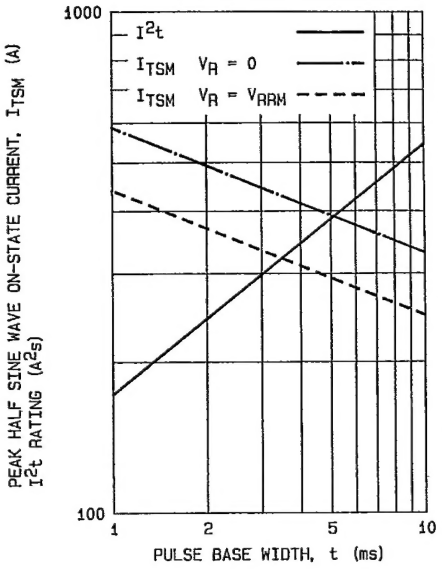


FIG.6 - NON REPETITIVE SUB-CYCLE SURGE ON-STATE CURRENT AND I^2t RATING (INITIAL T_J = 125 °C).

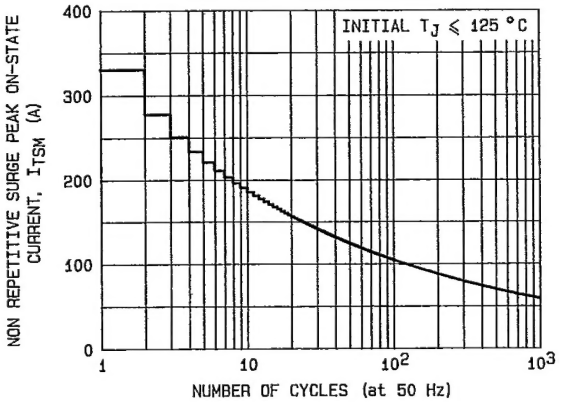


FIG.7 - NON REPETITIVE SURGE PEAK ON-STATE CURRENT VERSUS NUMBER OF CYCLES.

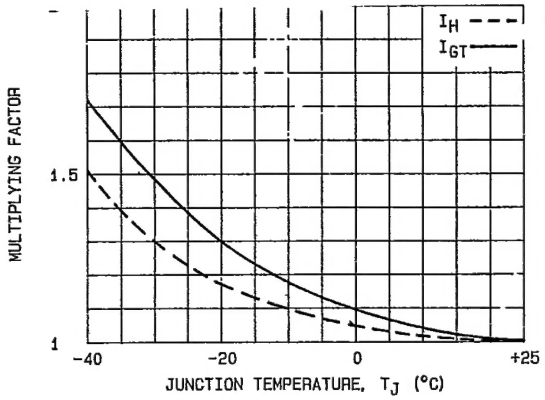


FIG.8 - RELATIVE VARIATION OF GATE TRIGGER CURRENT AND HOLDING CURRENT VERSUS JUNCTION TEMPERATURE.

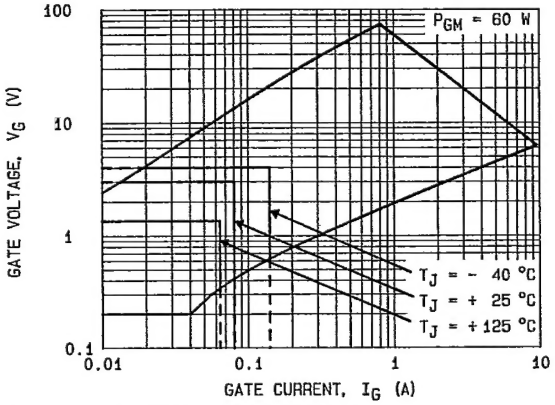
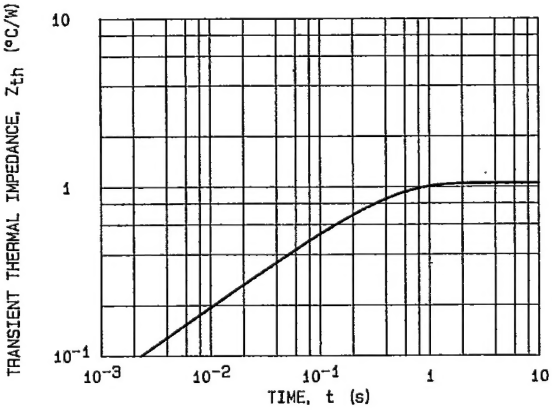


FIG.9 - GATE TRIGGER CHARACTERISTICS.



Conduction angle (α,β)	Effective thermal resistance (°C/W) junction to case	
	Sinusoidal	Rectangular
180°	1.13	1.17
120°	1.23	1.65
90°	1.32	1.87
60°	1.54	2.09
30°	1.98	2.64

FIG.10 - TRANSIENT THERMAL IMPEDANCE JUNCTION TO CASE.